Supporting Information.

Label-Free DNA Sensor Based on Surface Charge Modulated Ionic Conductance.

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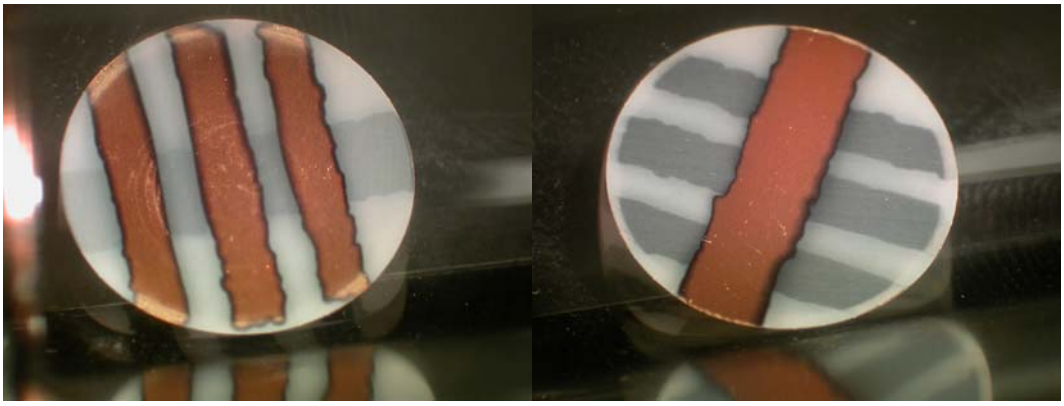


Figure A. Two sides of the membrane with deposited gold electrodes before assembly.

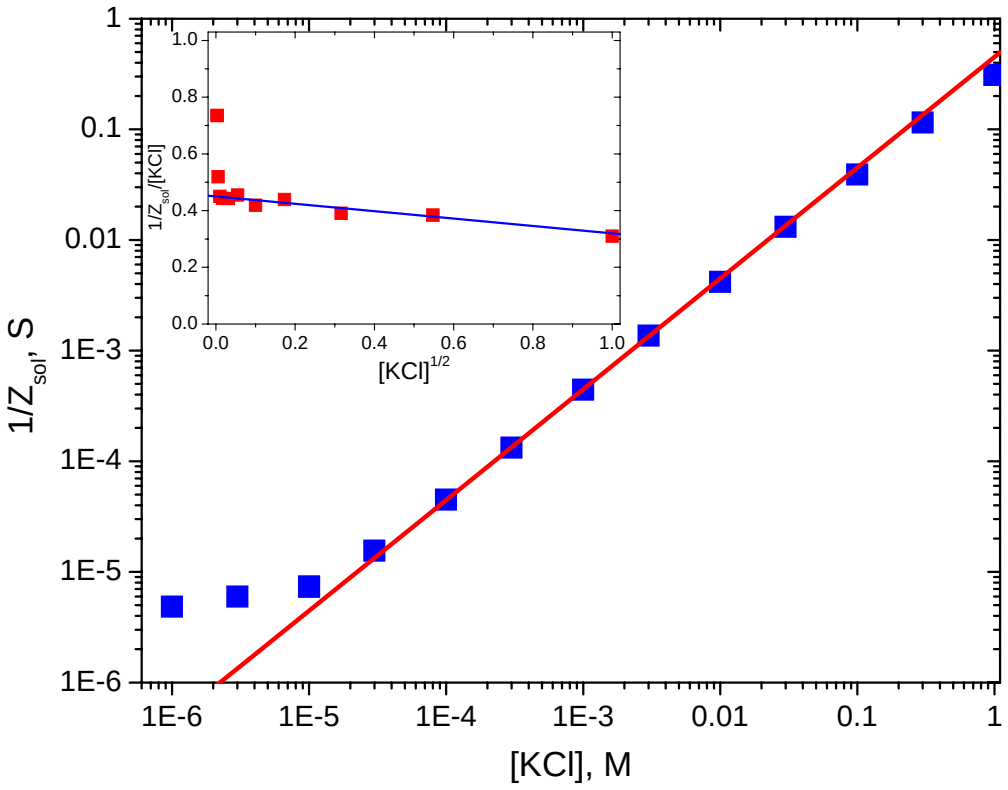


Figure B. Concentration dependence of the conductance for solutions of different [KCl] concentrations in air saturated DI water measured in a platinum electrodes cell with the cell constant of 0.3. The insert shows Kohlrausch plot of $|Z_{mem}[KCl]|^{-1}$ vs $[KCl]^{1/2}$

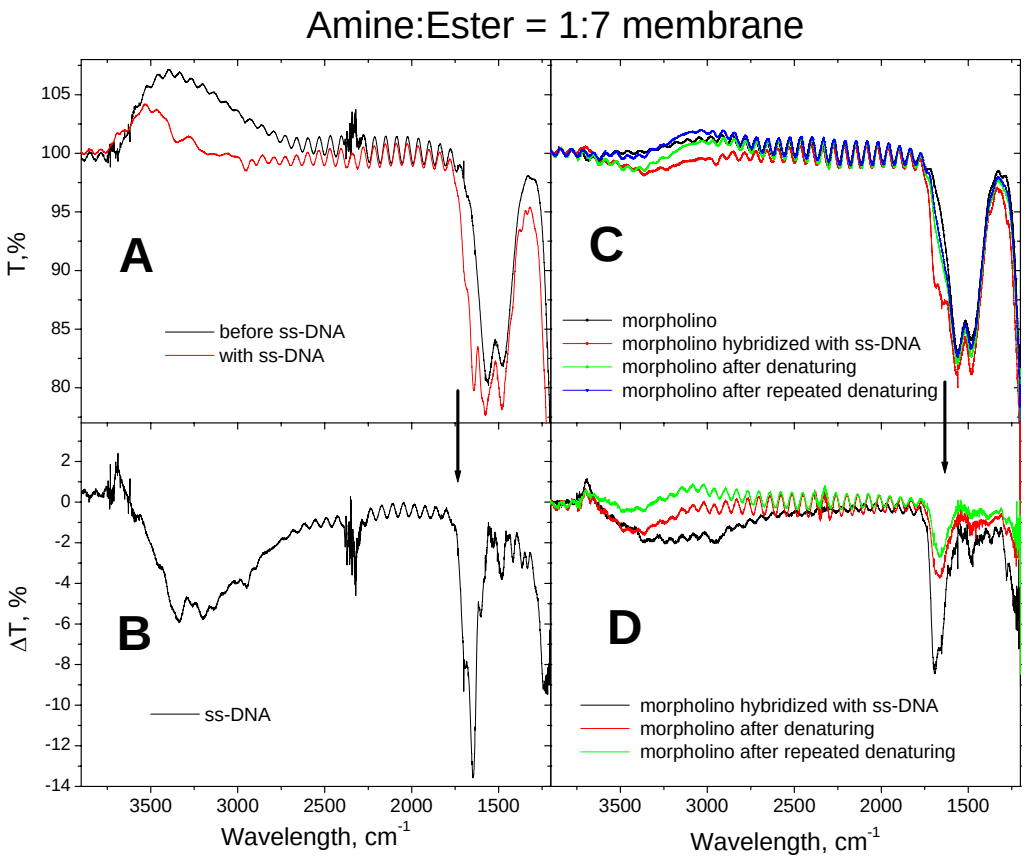
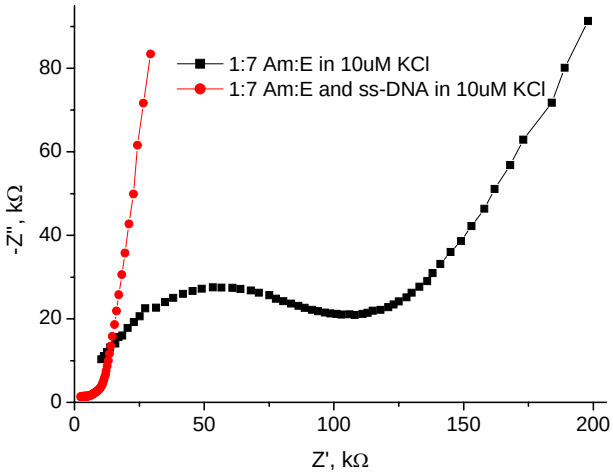


Figure C. FTIR spectra of membranes modified with 1:7 ratio of amine:ester and activated with gluteraldehyde. Different stages of manipulation with DNA and morpholino are shown: **A**. Activated by gluteraldehyde (before) and after immobilization of aminated ss-DNA. The difference between the two, shown in **B**, exemplifies the net effect of DNA. **C**. The morpholino signal is weak and overlaps with that of ester and Schiff base near 1600 cm^{-1} so that it is barely recognizable. The hybridized target ss-DNA has a blue shifted peak near 1650cm^{-1} and is better viewed when the morpholino spectrum is subtracted (**D**). Its amplitude is smaller than with covalently attached DNA (**B**) and denaturing in urea does not appear to fully eliminate it even after two cycles of 2 hour treatment.



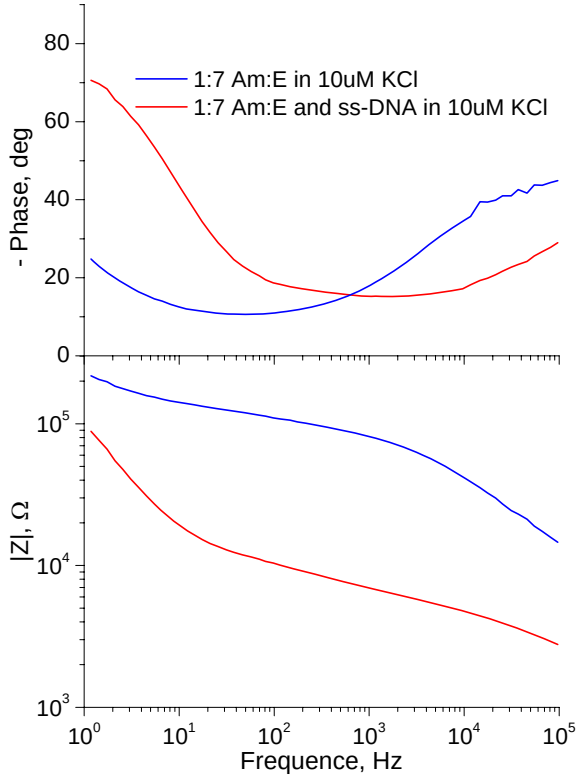


Figure D. The Nyiquist and the full Bode plots (with phase) for the membranes with optimized Amine:Ester = 1:7 ratio before and after attachment of ss-DNA. Measurements were performed in 10 μM KCl.

Table A. Variation of the electrode resistance for different thicknesses of deposited gold.

Time of Au layer deposition	R_1, Ω	R_2, Ω
3 nm Cr + 77 nm Au at 7.5^o	110	$>2\times10^6$
3 nm Cr + 77 nm Au at 15^o	80	$>2\times10^6$
3 nm Cr + 77 nm Au at 20^o	65	$>2\times10^6$
3 nm Cr + 147 nm Au at 15^o	22	150
3 nm Cr + 197 nm Au at 15^o	21	25